REMARKS

Claim rejections under 35 USC 112

Claims 1-11, 18-20, and 30-34 have been rejected under 35 USC 112, second paragraph, as being indefinite.

Claim 1 recites the limitation "the first DC signal" that has insufficient antecedent basis." Applicant has corrected an error in which this first DC signal was introduced in claim 1 as "first a direct current (DC) signal" so that it now properly recites "a first direct current (DC) signal." Therefore, the limitation "the first DC signal" appearing throughout claim 1 now has proper antecedent basis. Appearance of this limitation in claims 2-11, which depend from claim 1, now has proper antecedent basis, too. Claims 1-11 therefore satisfy 35 USC 112, second paragraph, in this respect.

Claims 1 and 18 recite "the conversion mechanism to operate in one of" two different modes. The Examiner has submitted that this limitation is recited in the alternative and is not a positive limitation, such that only one mode of operation is required. To that end, the Examiner has ignored the reduced-power or low-power mode when examining these claims. While Applicant respectfully disagrees with the Examiner's analysis, to expedite prosecution of this patent application, Applicant has amended claim 1 so that the feedback mechanism is to cause "the conversion mechanism to *switch operation between*" the two different modes. Thus, the conversion mechanism can operate in either mode, and claim 1 requires the conversion mechanism to be able to operate in both modes. Claim 18 has been amended similarly to claim 1. Applicant submits that amendment of claims 1 and 18 in this regard does not change the substantive limitations of these claims. Claims 1 and 18 now satisfy 35 USC 112, second paragraph. Furthermore, due to amendment of claims 1 and 18 in this regard, claims 2-11, which depend from claim 1, and claims 19-20, which depend from claim 18, satisfy 35 USC 112, second paragraph, in this respect.

Claim 30 recites the claim limitation "repeating," which the Examiner finds vague and indefinite. Applicant respectfully disagrees, but to expedite prosecution of this patent application, Applicant has amended claim 30 so that it no longer recites the repeating limitation, nor the until limitation that corresponds to the repeating limitation. Therefore, claim 30, and claims 31-34 that depend therefrom, now satisfy 35 USC 112, second paragraph.

Claim rejections under 35 USC 102

Claims 1, 2, 6-10, and 18-20

Claims 1, 2, 6-10, and 18-20 have been rejected under 35 USC 102(b) as being anticipated by Faulk (5,751,565). Claims 1 and 18 are independent claims from which claims 2, 6-10, and 19-20 depend. Applicant submits that claims 1 and 18 are not anticipated by Faulk, such that the dependent claims depending from claims 1 and 18 are also not anticipated by Faulk for at least the same reasons.

Claims 1 and 18 are limited to a mechanism that switches operation between a nominal/full-power mode and a reduced/low-power mode *according to a control signal received from the electronic device*. Applicant contends that Faulk does not disclose at least this limitation of claims 1 and 18. That is, Faulk does not disclose a mechanism that switches operation between two modes *according to a control signal received from the electronic device*, as to which the claimed invention is limited. Rather, Faulk discloses in FIG. 1 a feedback circuit 20 that monitors the load voltage of the load 15, which corresponds to the electronic device of claim 1, and in response generates a feedback signal V_{EAS} that ultimately switches operation between the two modes. (See also col. 1, ll. 50-59.) Faulk does not disclose the electronic device itself – i.e., the *load itself* – generating a control signal in accordance with which operation is switched between the two modes.

As a further example, the Examiner is invited to compare FIG. 1 of Faulk with FIG. 4 of the patent application as filed, which is one embodiment covered by the claimed invention. In

FIG. 1 of Faulk, the load/electronic device 15 does not provide any sort of *control signal* to direct switching of the switch SW. By comparison, in FIG. 4 of the patent application as filed, the feedback mechanism 110, besides monitoring the DC signal provided to the electronic device, also receives a *control signal 116* from the electronic device to direct switching of the mechanism 106. Because Faulk does not provide any sort of corresponding control signal, it does not anticipate claims 1 and 18.

Claims 21 and 30-32

Claims 21 and 30-32 have been rejected under 35 USC 102(b) as being anticipated by both Allen (6,538,419) and Konno (6,549,429). Claims 21 and 30 are independent claims, and claims 31-32 depend from claim 30. Applicant asserts that, as amended, claims 21 and 30 are not anticipated by either Allen or Konno. Therefore, for at least the same reasons, claims 31 and 32 are also not anticipated by either Allen or Konno.

With respect to Allen, claims 21 and 30 have been amended so that once a voltage of the second DC signal reaches a first voltage level in the low-power or first mode, switching of the first DC signal is lessened *but is not stopped*. Support for this amendment is found in the patent application as originally filed at least on page 5, lines 26-28, in which it is recited that "In FIG. 2B, this lessening is shown as a complete stopping of switching, whereas in other embodiments, lessening of switching may *instead reduce* the frequency and/or duty cycle of the switching." Thus, in these other embodiments, switching is not stopped as in the embodiment of FIG. 2B, but merely reduced.

Allen does not disclose lessening switching but not stopping switching in the low-power mode. Allen describes two modes of operation, a continuous or run mode, and a standby mode. (Col. 1, ll. 10-12, 18-19) The standby mode is comparable to the low-power or first mode of the claimed invention. Allen describes this standby mode of operation as follows.

> A switch mode power supply, embodying an inventive feature includes an output stage for generating output supply pulses in a run mode of operation and in

> a first portion of a burst mode cycle, during standby mode of operation. *The output supply pulses are disabled, during a second portion of the burst mode cycle.*

(Col. 2, ll. 42-46) Thus, during the second portion of the burst mode cycle of the standby mode of operation, there is no switching of the power supply, in contradistinction to the claimed invention, which lessens but does not stop switching of the power supply. Indeed, in the detailed description of Allen, Allen notes that "[d]uring a relatively long dead time interval tB-tC, *no switching cycles occur in transistor Q3 of FIG. 1.*" (Col. 5, ll. 49-51) Unlike the claimed invention, Allen completely stops switching of the power supply in a portion of its low-power or first mode. By comparison, the claimed invention lessens but does not stop switching. For at least this reason, Allen does not anticipate claim 1.

With respect to Konno, it is noted that claims 21 and 30 are limited so that switching occurs at a duty cycle in the low-power mode or first mode "until a voltage of the second DC signal reaches a first voltage level," and then switching lessens but does not stop. Applicant contends that Konno does not teach these limitations of the claimed invention. In particular, Applicant contends that Konno does not switch in a low-power or first mode at a given duty cycle *until a voltage of a DC signal reaches a given first voltage level.* That is, Applicant asserts that Konno is not concerned with the voltage of the DC signal to determine whether switching should occur at a given duty cycle, in a low-power mode or first mode, in contradistinction to the claimed invention.

Konno describes two modes of operation, a normal or continuous operation mode, and a standby mode. (Col. 2, ll. 6-11) The standby mode is comparable to the low-power or first mode of the claimed invention. Konno describes this standby mode of operation as follows.

> [C]ontrol means, in the standby mode, intermittently operates said switching control means so as to turn on said switching element at a given repetition interval and *for a given time period, . . .* wherein that time period is longer than a time for stabilizing an output from said DC output means and is longer than a time for entering a sonic frequency band.

(Col. 2, ll. 9-22) (See also col. 2, ll. 28-39; col. 3, ll. 48-60) Thus, Konno in its standby mode switches at a given interval (i.e., at a given duty cycle, to use the terminology of the claimed invention) for a time period that is based on two things. First, this time period is longer than the time needed to stabilize an output from the DC output means. Second, it is longer than the time required to enter a sonic frequency band. By comparison, in the claimed invention, switching is accomplished in the low-power or first mode at a given duty cycle until the voltage of a DC signal reaches a first voltage level.

Konno, however, is not concerned the voltage of the DC signal (presumably provided by the DC output means of Konno) to determine when switching at the duty cycle (the given interval in Konno) should be lessened. Rather, Konno's concern is that the time period during which switching at a given duty cycle/interval is accomplished must be longer than the time needed to stabilize the output of the DC output means, and longer than the time required to enter a sonic frequency band. In assessing this time period, Konno never compares the voltage of the DC signal provided by the DC output means to a first voltage level, which is what would be needed to be performed in Konno if it were to switch at a given duty cycle until the voltage of the DC signal reaches a first voltage level, as in the claimed invention. For this reason, Konno does not anticipate claims 21 and 30.

Claim rejections under 35 USC 103

Claim 11

Claim 11 has been rejected under 35 USC 103(a) as being unpatentable over Faulk. Claim 11 is a dependent claim, depending from claim 1, and therefore is patentable for at least the same reasons that claim 1 is.

Claims 12-17

Claims 12-17 have been rejected under 35 USC 103(a) as being unpatentable over Faulk in view of Allen. Claim 12 is an independent claim, from which claims 13-17 depend. Applicant submits that claim 12 is patentable over Faulk in view of Allen, such that claims 13-17 are patentable for at least the same reasons.

Claim 12 is limited "a modal mechanism to pass through the second DC signal to the comparing mechanism without modification in absence of assertion of a control signal by the electronic device to cause the switching control mechanism to operate in a normal-power mode, and to modify the second DC signal before passing the second DC signal to the comparing mechanism upon assertion of the control signal by the electronic device to cause the switching control mechanism to operate in a low-power mode." In other words, the modal mechanism of claim 12 passes through the second DC signal to the comparing mechanism without modification, or modifies the second DC signal before passing it through to the comparing mechanism. Applicant asserts that Faulk in view of Allen does not disclose this limitation of claim 12.

The Examiner has relied upon Allen as teaching the comparing mechanism and the modal mechanism of the claimed invention. Therefore, Applicant focuses on explaining why Allen does not disclose such a modal mechanism in arguing why Faulk in view of Allen does not render claim 12 unpatentable. The Examiner particular contends that the comparing mechanism is the error amplifier 23 in Allen, and that the modal mechanism in Allen is identified by the reference number 303. Applicant provides two ways of examining Allen to show why Allen does not disclose a modal mechanism as in claim 12 in its reference number 303: a more general way, and a more particular way, which are now both described in detail.

First, as can be seen from FIG. 1 of Allen, the voltage Vout is output to the error amplifier 23 and the mechanism 303. Therefore, the mechanism 303 could not modify the voltage Vout before passing it to the error amplifier 23, since the mechanism 303 is not situated between the voltage Vout and the error amplifier 23. Rather, the mechanism 303 receives the same voltage

Vout as the error amplifier 23 does – in other words, the input by which the mechanism 303 receives the voltage Vout is connected directly to the input by which error amplifier 23 receives the voltage Vout. Even if the mechanism 23 were to modify the voltage Vout, it thus would not be able to then pass this modified voltage to the error amplifier 23 in the diagram of FIG. 1 of Allen. There is no way schematically for the mechanism 303 to even possibly pass a modified voltage Vout to the error amplifier 23, in contradistinction to the claimed invention.

Second, the mechanism 303 is not described in any way whatsoever in Allen as something that modifies the voltage Vout before passage to the error amplifier 23, or that passes through the voltage Vout to the error amplifier 23 without modification. Allen describes the mechanism 303 in only one place, as follows.

> Voltage Vout is coupled to a run load circuit 302, during a run mode of operation, via a series coupled run load switch 401.
>
> . . .
>
> When . . . a user initiates a power-off request command . . . , a control signal ON/OFF is applied to an input terminal 412a of microprocessor 412. Microprocessor 412 of FIG. 1 generates control signal RUN/STBY at a LOW state for turning off run load switch 401. Turned off switch 401 de-couples run mode load circuit 302 of FIG. 1 from filter capacitor C10 for initiating and maintaining standby, burst mode of operation. Thereby, load circuit 302 is de-energized and a load circuit iL2 in load circuit 302 ceases. *On the other hand, load circuit 303 coupled to capacitor C10 includes stages that are energized during the standby mode.*

(Col. 3, ll. 27-29; col. 6, ll. 10-22) Thus, during the run/normal mode, the voltage Vout is output to the run load circuit 302, which is the circuit 302 that receives power during normal operation. However, during standby/low-power mode, the voltage Vout is instead output to the standby load circuit 303. In either case, the voltage Vout is always input to the error amplifier 23. The circuit 303 is simply the circuit that receives power during standby mode, instead of the circuit 302, which receives power during normal mode. The circuit 303 has nothing to do with modifying the voltage Vout or not modifying the voltage Vout before passage thereof to the error amplifier 23. Allen, and thus Faulk in view of Allen, does not in any way whatsoever disclose a modal

mechanism in the circuit 303 of Faulk as is in the claimed invention. Therefore, Faulk in view of Allen does not render claim 12 obvious and unpatentable.

Claims 26-29

Claims 26-29 have also been rejected under 35 USC 103(a) as being unpatentable over Faulk in view of Allen. Claim 26 is an independent claim, from which claims 27-29 depend. Applicant asserts that claim 26, as amended, is patentable over Faulk in view of Allen, such that claims 27-29 are patentable for at least the same reasons.

Applicant has amended claim 26 so that once a voltage of the second DC signal reaches a first voltage level, switching of the first DC signal is lessened but *is not stopped.* In this way, claim 26 has been amended similarly to claims 21 and 30, such that support for the amendment made to claim 26 is the same as that which as has been already described in relation to claims 21 and 30, above.

Faulk, and therefore Faulk in view of Allen, does not disclose lessening switching but not stopping switching. Faulk notes in its Abstract that

> [W]hen it [the voltage] rises to an upper threshold, the circuit generates a feedback signal for the PWM that *interrupts* its generation of switch control pulses until the load voltage drops to a lower threshold voltage.

Thus, whereas the claimed invention *lessens but does not stop* switching, Faulk, and therefore Faulk in view of Allen, completely interrupts, or *stops* switching, when the voltage in question has reached a given voltage level. Therefore, Faulk in view of Allen does not disclose all the limitations of claim 26.

That Faulk, and therefore Faulk in view of Allen, does not disclose a lessening of switching without stopping switching, as in the claimed invention, is also seen in the second graph from the left in FIG. 5 of Faulk. When the voltage in question reaches a given voltage level, the transistor Q2 is turned on, such that there is no further switching, as evidenced by the fact that no pulses are being generated within the signal PWM_{OLT}. As depicted in FIG. 1 of Faulk, the signal

PWM_{OUT} controls the switch SW, and hence switching. Therefore, when the voltage in question reaches a given voltage level in Faulk, and therefore in Faulk in view of Allen, the transistor Q2 turns on, resulting in no pulses being generated within the signal PWM_{OUT}, and hence in no switching. For this reason, Faulk in view of Allen does not render claim 26 unpatentable.

Claims 33-34

Claims 33-34 have also been rejected under 35 USC 103(a) as being unpatentable over Faulk in view of Allen. However, claims 33-34 are dependent claims depending from independent claim 30, and therefore are patentable for at least the same reasons that claim 30 is.

Claims 21-34

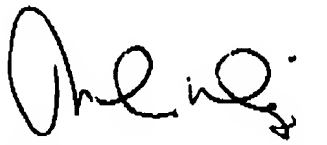
Claims 21-34 have been rejected under 35 USC 103(a) as being unpatentable over Faulk in view of Yang (6,496,390). Claims 21, 26, and 30 are independent claims, from which the remaining claims rejected on this basis depend. Applicant asserts that as amended, claims 21, 26, and 30 are patentable over Faulk in view of Yang, so that all the claims rejected on this basis are patentable over Yang.

Claims 21, 26, and 30 all are limited to lessening but not stopping switching of a voltage when another voltage has reached a given voltage level. Faulk, and therefore, Faulk in view of Yang, does not disclose such lessening but not stopping of switching of a voltage, as has been described in detail in relation to the rejection of claims 26-29 over Faulk in view of Allen. Therefore, claims 21, 26, and 30 are patentable over Faulk in view of Yang for reasons at least substantially similar to those described as to why claim 26 is patentable over Faulk in view of Allen, and such reasons are not repeated here to avoid redundancy.

Conclusion

Applicants have made a diligent effort to place the pending claims in condition for allowance, and request that they so be allowed. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Mike Dryja, Applicants' Attorney, at 425-427-5094, so that such issues may be resolved as expeditiously as possible. For these reasons, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



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Michael A. Dryja, Reg. No. 39,662
Attorney/Agent for Applicant(s)

Law Offices of Michael Dryja
704 228th Ave NE #694
Sammamish, WA 98074
tel: 425-427-5094
fax: 206-374-2819